

WHAT IS CLAIMED IS:

1 1. A CMOS pixel for use in a CMOS imager, comprising:.
2 a. a photodiode having a substantially square-shaped image
3 sensing area, an anode coupled to ground and a cathode;
4 b. a transfer transistor having a drain coupled to the cathode of the
5 photodiode, a gate controlled by a control signal, Tx, and a source coupled to a floating
6 sensing node;
7 c. a reset transistor having a drain coupled to a reset potential, a
8 gate controlled by a control signal, Rx, and a source coupled to the floating sensing node; and
9 d. a source follower coupled between the floating node and an
10 output of the unit pixel, the source follower controlled by a select signal.

1 2. The CMOS pixel of claim 1, wherein the source transistor, reset
2 transistor and source follower are positioned along at least two sides of the image sensing
3 area.

1 3. The CMOS pixel of claim 1, further comprising a substantially
2 hemispherically-shaped microlense positioned substantially over the image sensing area.

1 4. An array of CMOS pixels, each pixel comprising a substantially square
2 image sensing region, wherein a distance between the image sensing regions of neighboring
3 pixels is optimized to reduce crosstalk between the neighboring pixels.

1 5. The array of pixels of claim 4, wherein the distance is further
2 optimized to improve MTF.

1 6. An improved CMOS imaging array for use in a CMOS imaging
2 system, the improvement comprising:
3 using a substantially square image sensing region within each pixel to
4 reduce the distance between the image sensing regions of neighboring pixels.

1 7. The CMOS imaging array of claim 6, further comprising: a microlense,
2 positioned over the image sensing area of each pixel to increase the effective fill factor.

1 8. The CMOS imaging array of claim 7, wherein each pixel comprises:

- 2 a. a transfer transistor having a drain coupled to the cathode of the
3 photodiode, a gate controlled by a control signal, Tx, and a source coupled to a floating
4 sensing node;
- 5 b. a reset transistor having a drain coupled to a reset potential, a
6 gate controlled by a control signal, Rx, and a source coupled to the floating sensing node; and
- 7 c. a source follower coupled between the floating node and an
8 output of the unit pixel, the source follower controlled by a select signal.

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